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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,790	04/02/2001	Graham John Bratton	UOGR-009-US	5973

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EXAMINER
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MENON, KRISHNAN S

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 03/13/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/806,790

Applicant(s)

BRATTON ET AL.

Examiner

Krishnan S Menon

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 December 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

Claims 16-26 are pending in this application.

### *Specification*

Abstract submitted in the response to the first action is acceptable.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 659 469 A2.

EP (469) discloses a tubular monolith membrane having 0.5 - 10 micron average porosity (page 2: 51- 58), plurality of conduits, zeolites formed inside, ID 2-12 mm, and OD up to 10 mm and 30-100 mm (page 3: 3-7); monolith from alumina, zirconia (page 2:50-58);

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Claims 20-23: EP (469) discloses the inner surface of tubes having zeolite crystals grown on them by contacting with growth medium after pre-treating with zeolite initiator such as zeolite particles (example 1 and page 3: 11-20)

EP (469) suggests the OD range of the cylinders between 30 and 100 mm, and is silent on the OD between 10 and 30 mm. However, it would be obvious to one of ordinary skill in the art at the time of invention that in accommodating four or more parallel holes (plurality) of about 5 mm ID and wall thickness of about 0.2 mm or more in the cylinder as taught by EP (469), the cylinder OD could fall in the range of 20 to 30 mm. One would chose this range of OD to accommodate about 4 holes (plurality) of 5 mm ID as taught by EP for pervaporation applications when the volumes are relatively small.

2. Claims 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP (469) in view of WO 93/19840.

EP (469) discloses the tubular monolith membrane with a zeolite coating inside the tubes by crystal growth after coating with an initiator like zeolite powder. However, the primary reference fails to disclose silicic acids as the initiator for crystal growth. WO (840) teaches use of silicic acids as initiators (page 3). One of ordinary skill in the art at the time of invention could chose silicic acid as the initiator for the zeolite crystal growth in a zeolite membrane based on the teachings of WO (840) in place of the zeolite particle initiator as taught by EP (469), to aid in the binding of the structure (page 3, lines 5-30).

3. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP (469) in view of WO 97/18886).

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EP (469) discloses a zeolite membrane over a monolith tubular support by suspending powders of initiator in a liquid, contacting the support with the suspension, and then contacting the support with the growth medium for zeolite growth (page 3 11-20, working examples). However, the primary reference fails to teach the use of surface modifying agent treatment after the formation of the zeolite membrane. WO (886) teaches the use of silicic acids and alkyl silicates for such a surface treatment and cross-linking of zeolite membranes formed inside porous tubes. One of ordinary skill in the art at the time of the invention could chose cross-linking agents like silicic acids and alkyl silicates as taught by WO (886) to treat and thus augment the membrane as made by the process described by EP (469); the membrane formed by the EP (469) process being equivalent and having similar function to the membrane formed by the process in WO (886).

### *Response to Arguments*

Applicant's arguments regarding claims 16-26 are not persuasive for the following reasons:

Applicant argues that the reference has the tubular monolith conduits having outer diameters up to 10 mm for the pipe and 30-100 mm for the cylinder, whereas the applicant has the outer diameter as 20-25 mm. The argument implies that this is the only difference between the claimed invention and the reference. The examiner agrees that the reference recites outer diameters of 10 mm for the pipe and 30-100 mm for the cylinder. However, this is not the only parameter the reference indicated. The reference states there is no restriction imposed on the shape of the support, teaches wall thickness of the conduits from 0.2-several mm and ID as 2-12 mm, and has plurality of holes. The reference does not state that the cylinder OD cannot be less than 30 mm. Now, if the wall thickness is 0.2 mm and inside diameter is 5-9 mm ID would give 4 or more holes with an OD of 20 mm, which the reference teaches. The reference makes only approximate dimensions (see the word

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'about' for the diameter of the pipe) as in claim 16. One of ordinary skill in the art would look at all the overlapping dimensions the reference teaches.

Applicant's argument of superior performance: The examiner fails to see any superior performance in the only data provided at page 10 of the specification. The data shows permeability of 2% IPA solution at 21 Kg/m<sup>2</sup>/day. No separation factor is provided. This when compared, the reference has 17-50 Kg/m<sup>2</sup>/day at separation factors >10,000 (table I). See table III as well.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon  
Patent Examiner  
March 7, 2003

  
W. L. WALKER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700